REMARKS

Claims 1, 15 and 30 have been amended. Claims 37, 43-45, 49-51 and 65 have been cancelled without prejudice or disclaimer. Proper support for the amendment to claim 1 can be found in the specification, at least at paragraph [0026]. Claims 1, 2, 11-16, and 28-31 are pending and under consideration. Claim 1 is the independent claim. No new matter is presented in this Amendment.

REJECTIONS UNDER 35 U.S.C. §112:

Claims 15 and 30 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 15 and 30 have been amended in accordance with the Examiner's comments. Accordingly, Applicants respectfully request that the rejection of claims 15 and 30 under 35 U.S.C. §112, second paragraph be withdrawn.

REJECTIONS UNDER 35 U.S.C. §102:

Claims 1, 2, 11, 12, 65, 37 and 43-44 are rejected under 35 U.S.C. §102(b) as being anticipated by Tominaga et al. (U.S. Patent No. 5,252,370).

Applicants respectfully traverse this rejection for at least the following reasons.

Regarding the rejection of independent claim 1, it is noted that claim 1 recites a multi-layer structure comprising: a substrate; and a transformation layer comprising a metal oxide layer formed on the substrate, wherein a volume of a portion of the transformation layer irradiated by a laser beam spot expands when a temperature of the portion exceeds a predetermined temperature, thus forming a pit pattern on an upper surface of the transformation layer, the pit pattern having a diameter smaller than a diameter of the laser beam spot.

Tominaga discloses directing a recording laser light onto an optical recording medium 1, from the back surface of the substrate 2, in order to heat the recording thin film 3. The inorganic compound in recording thin film 3 is heated and thus decomposed generating a gas. The pressure of the evolving gas causes a space 31 to be created within the recording film 3. In

unison with a temperature rise in recording thin film 3, the temperature of substrate 2 in proximity to recoding thin film 3 is also increased so that substrate 2 becomes softened. This allows the pressure of the evolving gas to dig a recess 21 in the substrate 2 surface. As the case may be, dielectric thin film 4 can also be depressed by the gas pressure (column 6, lines 40-58). Accordingly, Tominaga discloses heating a recording film 3 so as to allow the pressure of the evolving gas to dig a recess 21 in the surface of the substrate. This is done with the purpose of causing a change in optical parameters of portions where recording laser light is irradiated such as optical constants and light path length, resulting in a lower reflectivity (column 3, lines 6-11).

Contrary to Tominaga independent claim 1 recites, amongst other novel features, a volume of a portion of the transformation layer irradiated by a laser beam spot expands when a temperature of the portion exceeds a predetermined temperature, thus forming a pit pattern on an upper surface of the transformation layer, the pit pattern having a diameter smaller than a diameter of the laser beam spot. In other words, in independent claim 1, the upper surface of the transformation layer is elevated at the site where the transformation layer is irradiated by the laser beam. By making the pit or resist pattern this way, the resist pattern can be minimized. Tominaga on the other hand is not concerned with minimizing the size of the resist pattern rather Tominaga is concerned with changing the reflectivity properties of the recording film. Furthermore, in Tominaga, a recess is formed at the site where the laser beam irradiates the layer.

Accordingly, Applicants respectfully assert that the rejection of claim 1 under 35 U.S.C. § 102(b) should be withdrawn because Tominaga fails to teach or suggest each feature of independent claim 1.

Furthermore, Applicants respectfully assert that the rejection of dependent claims 2, 11, 12 and 65 under 35 U.S.C. § 102(b) should be withdrawn at least because of their dependence from claim 1 and the reasons set forth above, and because the dependent claims include additional features which are not taught or suggested by the prior art. Therefore, it is respectfully submitted that claims 2, 11, 12 and 65 also distinguish over the prior art.

Regarding the rejection of claims 37, 43, 44 and 65 it is noted that these claims have been cancelled without prejudice or disclaimer. Accordingly, the rejection of claims 37, 43, 44 and 65 is moot.

REJECTIONS UNDER 35 U.S.C. §103:

Claims 13, 16, 28-31, 45 and 49-51 are rejected under 35 U.S.C. §103(a) as being unpatentable over Tominaga et al. (U.S. Patent No. 5,252,370) as applied to claims 1 and 37 above in view of Esho et al. (U.S. Patent No. 4,504,548).

Regarding the rejection of claims 13, 16 and 28-31, it is noted that these claims depend from independent claim 1. As noted above, Tominaga fails to teach or suggest the novel feature of independent claim 1.

Esho discloses an optical recoding medium which permits information to be written and read by a laser light (column 1, lines 6-10). Esho does not teach or suggest anything about a volume of a portion of the transformation layer irradiated by a laser beam spot expands when a temperature of the portion exceeds a predetermined temperature, thus forming a pit pattern on an upper surface of the transformation layer, the pit pattern having a diameter smaller than a diameter of the laser beam spot.

Accordingly, Esho fails to cure the deficiencies of Tominaga and thus fails to teach or suggest the features recited in independent claim 1 from which claims 13, 16 and 28-31 depend.

Therefore, Applicants respectfully assert that the rejection of claims 13, 16 and 28-31 under 35 U.S.C. §103(a) should be withdrawn because neither Tominaga nor Esho, whether taken singly or combined, teach or suggest each feature of independent claim 1 from which claims 13, 16 and 28-31 depend.

Regarding the rejection of claims 45 and 49-51, it is noted that these claims have been cancelled without prejudice or disclaimer. Accordingly, the rejection of these claims is moot.

Claim 14 is rejected under 35 U.S.C. §103(a) as being unpatentable over Tominaga et al. (U.S. Patent No. 5,252,370) and Esho et al. (U.S. Patent No. 4,504,548) as applied to claims 1 and 13 above in view of Shiratori et al. (U.S. Patent No. 5,648,134).

Applicants respectfully traverse this rejection for at least the following reasons.

It is noted that claim 14 depends from independent claim 1, and as noted above, Tominaga does not teach or suggest the features recited in independent claim 1.

Esho also fails to cure the deficiencies of Tominaga.

Shiratori discloses a thermal recording medium in which a local region of a recording layer is heated to a predetermined temperature to change the state of the local region so that information is recorded or erased and, more particularly, to an optical recording medium capable of recording information by irradiation of a light beam (column 1, lines 10-17). It is noted that Shiratori does not teach or suggest anything about the pit pattern having a diameter smaller than a diameter of the laser beam spot.

Accordingly, Shiratori also fails to cure the deficiencies of Tominaga and Esho.

Therefore, Applicants respectfully assert that the rejection of claim 14 under 35 U.S.C. §103(a) should be withdrawn because neither Tominaga nor Esho nor Shiratori, whether taken singly or combined, teach or suggest each feature of independent claim 1 from which claim 14 depends.

Claim 15 is rejected under 35 U.S.C. §103(a) as being unpatentable over Tominaga et al. (U.S. Patent No. 5,252,370) and Esho et al. (U.S. Patent No. 4,504,548) as applied to claims 1 and 13 above in view of Kondo et al. (U.S. Patent No. 6,693,873).

Applicants respectfully traverse this rejection for at least the following reasons.

It is noted that claim 15 depends from independent claim 1, and as noted above, neither Tominaga nor Esho, whether taken singly or combined, teach or suggest the novel features of independent claim 1.

Kondo discloses an information recording medium and a manufacturing method thereof, wherein a reproduced signal in high output and high quality can be obtained from the information recording medium and address information can be read out accurately from the information recording medium even though the information recording medium is used by irradiating a laser beam on the surface that is opposite to the substrate (column 3, lines 12-21).

Therefore, Kondo does not teach or suggest the pit pattern having a diameter smaller than a diameter of the laser beam spot, and thus fails to cure the deficiencies of Tominaga and Esho.

Therefore, Applicants respectfully assert that the rejection of claim 15 under 35 U.S.C. §103(a) should be withdrawn because neither Tominaga nor Esho nor Kondo, whether taken singly or combined, teach or suggest each feature of independent claim 1 from which claim 15

depends.

CONCLUSION:

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 503333.

Respectfully submitted,

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